

This comment is filed in opposition to the RM-10330. The writer has worked with electronics since 1962, has held an Amateur Radio license since 1958, and has worked in the areas of EMC test and design since 1983, including computing and telecomm products, at the consumer, industrial TEMPEST, and telecomm plant levels. I am currently employed by a leading manufacturer of advanced telecommunications equipment, whom I believe would be adversely affected by adoption of the Petition as it is presented. However, I file on my own behalf, not that of my employer, trusting the Commissioners will see the relevance of the issues I raise.

Messr's Schellhardt and Leggett have again raised an issue of which industry has been aware for decades. It is something which, where reliable service is necessary, is already addressed by industry. For example, see the requirements of Telcordia (formerly Bell Core) GR-1089.

Their lurid portrait of possible threats and consequences should not be allowed to detract from realization of the dependence our society places on electronics in communication and commerce. However, they ignore the normal, interaction between customers, vendors and manufacturers to make products that work reliably.

The reliability of some of their sources may also be called into question. For example, the magazine, Popular Mechanics, cited by them with reference to the "E-bomb," also published, in 1980, a cover article on a perpetual motion motor.

Though Schellhardt and Leggett propose cost caps on equipment, it is by no means certain that manufacturers will be able to absorb those costs, or that customers will pay for features they do not use. Considering the probability of an EMP event for the usual consumer installation, it seems reasonable to require, knowing that some vulnerability will remain, only a level of immunity sufficient to overcome present customer issues and to at least partially protect against higher levels of threat.

Moreover, requiring shielding against 100,000 volts per meter is simplistic. Equipment operated during an EMP is not likely to fail as a direct of the EMP, but as a result of transients developed on wiring attached to it. Since the induced transients will vary from one installation to another, requiring a level of protection adequate to the worst case imposes a burden on manufacturers that is more appropriately assumed by the user. For example, the Commission does not require that a maker of transmitters prevent them from creating a hazardous level of radio frequency energy; that is relegated to the responsible installer and user. This approach is also effective against the possible – and remotely probable – threat of EMP.

What evidence exists, suggests that electronic equipment is not as vulnerable as the Petitioners portray. In the 1980's the National Communications System, commissioned tests on equipment, published as report NCS TIB 85-10, which was excerpted in QST, the publication of the American Radio Relay League, from August through November 1985. Almost all of the commercially available Amateur Radio equipment (some types of which are still in use 16 years later) was able to withstand a 50kV/m EMP, or its induced conducted transients, after changes had been made to the installations in which

they were found. These mainly involved surge suppression at AC power and antenna wires.

Advanced microlithography techniques have indeed resulted in semiconductor devices more vulnerable to ESD and other transients. However, the vulnerability such technology could incur has been ameliorated by measures taken to insure devices are as survivable during handling and assembly as their predecessors were. In addition, measures taken to reduce EMI from higher-speed and higher-frequency devices also serve to harden against induction of EMP-related surges and transients.

As to the threat, it has been known since 1962 that a nuclear device detonated well above the atmosphere would cause an EMP. The overall likelihood of such seems to have somewhat diminished since the end of the Cold War and the possibility of a nuclear exchange with the Soviet Union. Those nations posited as a nuclear threat do not have the ability to place a nuclear weapon where it would be needed to generate the EMP the Petitioners state we must counter.

In addition, the posited lesser electromagnetic devices and weapons generating EMP and similar stresses do not require hardening of a whole nation. Indeed, some of them might be better used for their explosive affect on target than for the fields they can generate. Countermeasures against the terrorist EMP device, or even a non-nuclear device delivered by a nation-state, may be more readily accomplished at the facility and building level, and at less cost, than hardening all equipment which might be placed in it.

For these reasons, Schellhardt and Leggett are perhaps overstating their case, and asking for more, sooner than a need can arise. This writer believes the Commission should indeed address the vulnerability of electronic equipment – as authorized by Congress – to electromagnetic upset. However, in the extant Petition, it seems unnecessary to take the steps the Petitioners have requested, in the time they have asked they be taken.

Respectfully submitted,

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14 December, 2001